Astronomical Search for Origins



THEME UPDATE

Philippe Crane
ORIGINS THEME SCIENTIST

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Astronomy/Physics Division



- Budget Issues:
 - Discussed by Anne Kinney.
 - Issues: SIRTF, GP-B
- Imminent 2002 Launches:

- HST SM3B Feb 28th

– GALEX July

– CHIPS August

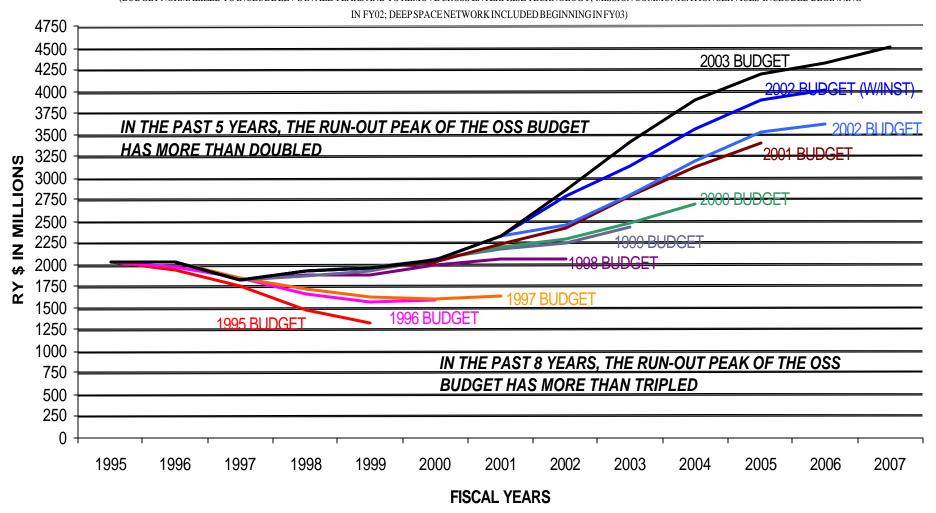
– GP-B October

- SIRTF January 2003.



SPACE SCIENCE BUDGET HISTORY

(BUDGET NORMALIZED TO INCLUDE ELV'S IN ALL YEARS AND TO REMOVE CROSS ENTERPRISE TECHNOLOGY: MISSION COMMUNICATION SERVICES INCLUDED BEGINNING



Astronomy/Physics Division



- Astronomy and Physics Working Group (APWG)
 - Members Appointed—Doug Richstone is the chair.
 - First Meeting in April 2002
- Science Archives Working Group (SAWG)
 - Membership is (TBD), Chair is Joel Bregman.
 - First Meeting is TBD?

• Personnel:

- Michael Moore is a new Civil Service Program Executive (had been a Marshall detailee)
- Guy Stringfellow's replacement, Jay Frogel joins us on March 11.
- 2 Discipline Scientist IPA positions are being filled.
- 2 Program Executive IPA positions to be filled.

Astronomical Search for Origins Mission Status



	Launch STATUS		Comments	
HST	Feb '02	GRN	Launch date Feb. 28, 02. For SM3B. All systems are go!	
			About 25% of Cycle 11 orbits won by STScl PI's	
NGST	June '09	GRN	AO released. Prime selection continues, STScl proposal for Operations	
			received and being evaluated. Instrument prop due Mar 5	
SIRTF	01/03/02	RED	Launch Slip to Jan 2003, Additional Funding will be required.	
			Major problem for APD budget	
SOFIA	Dec '04	GRN	Aircraft and telescope efforts on track for integration this Fall.	
Starlight		RED	Starlight Mission now ground-based demonstration program	
9			otanight Missish new greatha sassa acmenistration program	
SIM	Dec '09	GRN	Both Narrow and Wide Angle Astrometry Baseline performance can now be met	
			with the current component technology. Some chance to accelerate launch	
TPF	NET 2014	GRN	Final TPF Architecture Review held in Dec.	
			Developing R&A program	
Keck Int.	2003	YEL	No major change since Dec report. Still no permits for Outriggers	
FAME	Oct '04	RED	Not confirmed for Phase C/D. Effectively Cancelled	
		GRN	Proceeding on Plan, only normal, minor problems	
		YEL	Significant Problems or Concerns but feasible plan to resolve	
		RED	Major Problems; Solution path unclear	
		*	As shown in the FY02 President's Budget Request	

Astronomical Search for Origins Mission Status



	Launch	STATUS	Comments	
Navigator	10/01/01	GRN	Program Plan in place, E/PO plans being reworked	
ISC	Jun' 02	GRN	Comfirmation Readiness Review held in Jan	
LBTI	Jun ' 06	YEL	Comfirmation Assessment in Nov. Phase CD transition may be delayed until	
			June or July 02. Issues:SW, Ops, phase retarder, and accetance tests	
2MASS	Jan '98	GRN	Observations Completed; Final year of funding for Analysis	
FUSE	June '00	YEL	FUSE has resumed Sci Ops with limited sky coverage. Still some FY02 funding	
			issues to be addressed.	
		GRN	Proceeding on Plan, only normal, minor problems	
		YEL	Significant Problems or Concerns but feasible plan to resolve	
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Extra-Solar Planets NRA Results



33 Proposals Received

- 3 Categories
 - SIM Replacements 3 proposals
 - TPF Technology or Precursor Science: 8 Proposals
 - TPF Related Technologies 20 Proposals
- Five technology areas:

•Interferometers	7
•Coronographs	7
Optics & Optical Elements	7
•Tethers & Formation Flying	5
•Other: Electronics, Microlens	5

• 6 Proposals Selected for Phase A studies of 6 months with an option for a further 6 months.



Extra-Solar Planets NRA Results



- 1. Abplanalp, C., Kodak: Large Monolithic Mirror Configuration
- 2. Kasdin, J., Princeton: Shared Pupil Coronographs for Extra-Solar Planet Detection and Characterization: Theory and Validation of Basic Concepts
- 3. Noecker, C., Ball: Mid-IR Cold Interferometric Nulling Demonstration in Space (CINDIS)
- 4. Woodruff, R., Boeing-SVS: Feasibility of and Technology Roadmap for Coronographic Approaches to TPF.
- 5. Chen, P., Composite Mirror Applications: Lightweight, Ultra Smooth mirrors for TPF and Related Missions.
- 6. Woolf, N.J., Arizona: Self-luminous Planet Finder(SPF)



TPF Precursor Science



ALL ROADS LEAD TO TPF!

So the goals of TPF Precursor science R&A program is to build the knowledge base required to decide what we need to do to directly detect an Earth-like planet out side the Solar system.

- 1. Highly visible to the astronomy community, OMB, Congress and the public.
- 2. An integrated approach that brings together several elements and focuses the R&A on TPF related science.
- 3. Provides direct ownership of the content and results to the TPF program



TPF Precursor Science



Current Content

- 1. Origins of Solar Systems: Search for Extra Solar Planets R&A program (ROSS element ca \$1.5M/year. Funds Marcy, Cochran, Bennet etc)
- 2. Origins of Solar Systems: Theory, Star formation and related elements. ROSS element funds about \$1.5M in research directly related to planet formation and evolution (Boss, Lin and others)

Potential Content

- 1. TPF Funded Precursor Science (anticipate ~10% of total TPF funding in the next 5 years will be directed R&A. about \$2M/year starting FY03
- 2. Redirection and expansion of the Michelson Fellowship program to parallel the Hubble Fellowships.
- 3. Directed LTSA's, NRC Fellowships, GSRP's etc

TOTAL FUNDING IN THE \$7-\$10M/year RANGE.



TPF Precursor Science



ISSUES:

- 1. Theory vs Observation
- 2. Small (<\$100K/yr), Big(\$300-\$400K/yr), and Large(\$800-900K/yr)
- 3. How to make this look like an integrated program building toward TPF?